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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,411	01/23/2002	Jong Han Lee	0630-1414P	3426
2292	7590	10/05/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			NGUYEN, DUNG X	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,411

Applicant(s)

LEE, JONG HAN

Examiner

Dung X Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 3 and 7 - 10 is/are rejected.
- 7) ☒ Claim(s) 4 - 6 and 11, 122 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 1, 7, and 11 are objected to because of the following informalities: “an FDTS/DF equalizer” as recited in linen 1 must be written without abbreviation, at least a the beginning appearance. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 8 recites the limitation "the subtracted signal and the reference signal" as recited in line 3. There is insufficient antecedent basis for this limitation in the claim. Claims 9, 10 are rejected for the reason above.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claim 7 is rejected** under 35 U.S.C. 102(b) as being anticipated by Strolle et al. (US Patent No. 5,757,855).

Strolle discloses an FDTS/DF equalizer using absolute value calculation of a system restoring a data signal passing through a channel comprising:

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an equalizer (30, 60 in Figure 1) making a sampled data signal to be a causal signal (30 in Figure 1 and column 1, lines 41-45) and removing an intersymbol interference of the causal signal (60 in Figure 1 and column 1, lines 52-54); and

a detector (50 in Figure 1 and Figure 4) detecting an original data from the signal without the intersymbol interference by using absolute value calculation (304, 308, 310 in Figure 4).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-3 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Trans PUS patent No. 5,757,855).

Regarding claim 1, Trans teaches an equalizer using absolute value calculation comprising:

a feed-forward filter (1005 in Figs. 10A-C) receiving and filtering a sampled signal;

a feed-back filter (1009 in Figs. 10A-C) filtering a restored data;

a subtractor (see the subtractor between 1005 and 1009 in Figs. 10A-C) obtaining a difference between signals respectively filtered by the feed-forward filter and the feed-back filter; and

a detector means (1007 in Figs. 10A-C) receiving the subtracted signal and detecting a data.

Trans further teaches one may replace a simple slicer 1007 with a sequence such as a viterbi detector as the detector means for a better performance (column 4, lines 61-65). However, Trans does not specify the detector means using absolute value calculation.

Strolle discloses maximum likelihood sequence or a viterbi detector placed within a decision feedback loop, in place of a slicer, to provide an enhancement of the bit error rate in a channel (column 2, lines 49-54). The detector uses absolute value calculation (304, 308, 310 in Figure 4).

Therefore, it would have been obvious for a person of ordinary skill in the art to implement a viterbi detector using absolute value calculation so as to enhance the bit error rate in a channel.

Regarding claim 2, strolle teaches that the feed-forward filter changes the sampled signal to a causal signal (column 1, lines 41-45).

Regarding claim 3, strolle teaches that the feed-back filter removes an intersymbol interference of the causal signal (column 1, lines 52-54).

Allowable Subject Matter

8. **Claims 4 - 6 and 8 – 10** to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims, and to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action,

9. **Claims 11 and 12** would be allowable if rewritten or amended to overcome the objection(s), set forth in this Office action.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Al-Dhahir et al. (US patent # 6,870,882 B1) discloses a finite-length equalization over multi-input multi-output channels.

Tsujimoto (US patent # 5,398,259) discloses a decision-feedback equalizer for canceling CW interference.

Bergmans et al. (US patent # 5,291,523) discloses a Viterbi receiver with improved timing means.

Aryyavisitakul et al. (US patent # 5,291,523) discloses a time dispersion equalizer receiver with a time-reversal structure for TDMA portable radio systems.

Watanabe (US patent # 4,271,525) discloses an adaptive diversity receiver for digital communications.

Hirsch et al. (US patent 3,715,670) discloses an adaptive DC restoration in single-sideband data systems.

Contact Information

11 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung X. Nguyen whose telephone number is (571) 272-3010. The examiner can normally be reached on Monday through Friday from 8:00 AM to 17:00 PM.

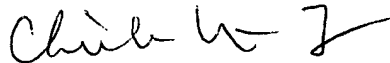
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Fan, Chieh M. can be reached on (571) 272-3042. The fax phone numbers for this group is (571) 273-3021.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

DXN

September 20, 2006

A handwritten signature in black ink, appearing to read "Chieh M. Fan", with a stylized flourish at the end.

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER